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EXAMINER

FERRIS III, FRED O

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Paper No. 017

Application Number: 09/241,735
Filing Date: February 02, 1999
Appellant(s): KIMURA ET AL.

Larry L. Hume
For Appellant

EXAMINER'S ANSWER

This is in response to the substitute appeal brief filed 12 March 2003.

EXAMINER'S ANSWER

(1) *Real Party in Interest*

A statement identifying the real party in interest is contained in the brief.

(2) *Related Appeals and Interferences*

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) *Status of Claims*

The statement of the status of the claims contained in the brief is correct.

(4) *Status of Amendments After Final*

The appellant's statement of the status of amendments and final rejection contained in the brief is correct. No after final amendments have been filed.

(5) *Summary of Invention*

The summary of invention contained in the brief is not agreed with because the brief does not contain a concise explanation of the invention as defined in the claims involved in the appeal,

Furthermore, Appellants improperly introduce arguments relating to prior art techniques and alleged advantages of the present invention. (such as "Appendix B" and "Introductory Remarks") Such arguments are not considered. This appears to be an attempt to cure the related 112(1) deficiencies in the specification.

(6) *Issues*

Appellant's brief presents arguments relating to examiner's objection to the Specification. This issue relates to petitionable subject matter under 37 CFR 1.181 and not to appealable subject matter as previously indicated by examiner (paper #14). See MPEP § 1002 and § 1201. Appellants nevertheless continue to argue petitionable issued. Such arguments are not addressed.

Appellant's brief attempts to introduce argument in the Summary of the Invention on page 3, lines 10-20.

It is noted that appellant's arguments regarding prior art have essentially only recited the prior art teaching followed by a recitation of the claims without pointing out the patentable distinction between the claimed invention and the prior art.

(7) *Grouping of Claims*

The appellant's statement in the brief that certain claims do not stand or fall together is not agreed with because appellants have never argued (and still have not argued) the claims other than as a single group. Further, appellants not presented any rational or explanation for their grouping in the sections entitled "grouping of Claims" or in "Arguments". In the "Arguments" section, appellants have essentially only recited the prior art teaching followed by a recitation of the claim limitations without pointing out the patentable distinction between the claimed invention and the prior art. Therefore, the examiner considers the claims as a single group.

(8) *Claims Appealed*

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

The following is a listing of prior art of record relied upon the rejection of claims under appeal.

U.S. 6,282,701 Wygodny et al 07-1998

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

These rejections are set forth in prior Office Action, Paper No. 10.

Claims 1-37 are rejected under 35 U.S.C. 112, first paragraph, for the reasons set forth in the objections to the specification. No algorithms are given and no analytical process is described. The specification makes reference to the claimed invention **analyzing a computer program, and automatically generating program analysis information but does not specifically explain the process. For example: Page 19, line 11 states; "The program analysis unit 20₂ executes an **analysis process** for graphically displaying a flow graph on the computer screen". The specific **analysis process** is not disclosed. Reference is made to the **analysis process** "analyzing by batch process using various kinds of **program analysis** information" P19-L24), and executing a "**predetermined analysis process**" (P20-L19) but no algorithm or methodology for the **analysis process** is given.**

Claims dependent on independent claims 1, 11, 13, 22, 24, and 33 inherit this defect as do new claims 35-37.

Claims 1-37 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by U.S. Patent No. 6,282,701, Wygodny et al. While the specification regarding the

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claimed invention is delinquent in the areas cited in paragraphs 3 and 4, (paper 10) the examiner makes prior art rejections based the following observations.

Wygodny discloses a program analyzer method and apparatus having a graphical user interface, which collects trace information for use in **analyzing a computer program**. (a **"trace"** merely refers to the **analysis information being obtained**) The tracing is performed without requiring modifications to the executable or source code files. Trace data is collected according to instructions in a trace options file that is set up through an interactive process by an operator. The trace data provides a **graphical representation of the collected (analyzed) data** showing **program flow, program calls, and I/O information**. (Figs. 3A, 3B, 5-8, 13-14) The system can trace multiple processes in the program and display translated trace information on the display screen to allow the user to **analyze the execution of the program**. **Variables and memory values** can also be traced. **The user can view variable values** as in an ordinary debugger. The variables may include function arguments, the C++ "this" pointer, function return values, local variables, global variables, static variables, etc. The data to which a pointer is pointing can also be traced. Tracking of variables in memory is accomplished by first **analyzing the debug information** to find the address (global, static, stack, or dynamic address) of the **variable** and the **data it holds**. (Abstract, CL2-L53-67, CL3-L17, CL4-L54-67, CL7-L8, 27, 47, CL8-L6, 28, 41, 51, 64)

(11) Response to Argument

Regarding appellants' arguments that the examiner has not established a case regarding the specification's lack of written description or enablement relating to the 112(1) rejection: Appellants' have argued that the examiner has not specifically established whether the specification lacks either enabling support or written support. The examiner asserts that the previous office actions have clearly been directed to lack of enablement. For example, on page 4, line 11 of paper #6 the examiner stated that "The specific **analysis process** in not disclosed" (i.e. not enabled) and on page 8, line 17 of paper #10 the examiner stated that "steps 5 (generate **analysis information**) and step 9 (**analyze the program**) are not described in a manner that would enable any

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person skilled in the art to make and/or use the invention.” Further, appellants have only argued lack of enablement and not written description in previous amendments and therefor have always understood that the rejection was based on a lack of enablement. (please see appellants’ Amendment A, paper #8, page 10, line 13 –24, page 12, line 14) Accordingly, the examiner asserts that the 112(1) rejections have clearly been directed to lack of enablement.

Appellants have also argued that examiner has not identified the specific limitations which are lacking enablement. Looking at the limitations of independent claim 1, for example, we see that appellants are claiming limitations relating to a program analysis means and processes relating to automatically generating program analysis. In the 112(1) rejection (papers #6 and #10) the examiner made the following statement:

“No algorithms are given and no analytical process is described. The specification makes reference to the claimed invention **analyzing a computer program, and automatically generating program analysis information** but does not specifically explain the process. For example:

Page 19, line 11 states; “The **program analysis** unit 20₂ executes an **analysis process** for graphically displaying a flow graph on the computer screen”. The specific **analysis process** is not disclosed. Reference is made to the **analysis process** “analyzing by batch process using various kinds of **program analysis** information” P19-L24), and executing a “**predetermined analysis process**” (P20-L19) but no algorithm or methodology for the **analysis process** is given.”

In response to appellants’ arguments that the final office action (paper #10) did not clearly identify the claimed limitations that lacking enablement the examiner points out that the statement found on page 8, line 7 states the following:

“For example, the specification makes repeated reference to “**program analysis**” and an “**analysis process**” but never discloses specifically what the system/method does to “**analyze the program**” or exactly what the “**analysis process**” consists of. The “**analysis**” process is clearly a critical part of the invention but is not disclosed in the specification. These terms appear in each of the claims and are clearly not supported by the specification.”

Accordingly, the examiner asserts that the rejection clearly identifies the specific limitations of claims that lack enablement. The examiner further disagrees with appellants' statement that the examiner merely rejected the claims under 112(1) "for the reasons set forth in the objection to the specification" and points out that the claims have been rejected for reasons as cited above.

Regarding appellants' arguments relating to objection to the specification:

Appellants have argued that the objection to the specification is unreasonable because the referenced material does not contain essential matter. The examiner respectfully disagrees. Upon initial examination of the referenced material, the examiner determined that based on the abstract, and the figures, and because enablement for the claims could not be found in the specification, subject matter which could provide the missing enablement for the claims was possibly contained in the referenced material. Accordingly, the objection to the specification was given by the examiner as a good faith attempt to further the prosecution of the case. In any case, appellants have merely engaged in circular reasoning.

Regarding appellants' arguments relating to 35 U.S.C 112(1) rejection:

Appellants have argued that the specification of the claimed invention is not required to explain certain disclosed processes because the processes are generally well known. These processes include **metrics information, redundancy information, and maintenance document** information which are generated on the basis of program analysis information, such as **source code, syntactic analysis tree, symbol table, call graph, flow graph, data flow information, program dependence graph, and**

module I/O information as disclosed in the specification. The examiner has concurred that certain processes relating to program analysis of elements such as source code, symbol table, call graph, flow graph, and data flow information are obvious and would have been known to one skilled in the art. However, examiner has asserted that processes such as **metrics information**, **redundancy information**, and **maintenance document** information do not have an equivalent specific meaning in the art and are not sufficiently defined by the specification. Appellants argue that **metrics information**, for example, is known to be a measure of software quality and reference amended specification page 13, lines 15-27 which states the following:

"The "metrics information" pertains to numeration indices of software. The software analysis apparatus of this embodiment **measures metrics which represent quantitative complexity**, and those which represent qualitative complexity, and generates respective information. As metrics of quantitative complexity, two different kinds of quantities, i.e. a size metric that **measures the physical description quality** of a program, and **cyclomatic number that measures the complexity of a control structure** are measured. On the other hand, module cohesion and module coupling relating to the contents of modules are measured, and are representative of the quality complexity of the software.

Since the specification does not specifically disclose how one **measures metrics** which represent **quantitative complexity**, or **measures module cohesion and coupling**, or **calculates the cyclomatic number that measures the complexity of a control structure**, one of ordinary skill in the art would be at odds to determine specifically how the claimed inventions' **metrics information** ultimately realizes the "**numeration indices**" of the software. Accordingly, the examiner has maintained the 112(1) rejections since the specification does not provide a description in such full, clear, concise, and exact terms as to enable any person skilled in the art to make and/or use the invention without undue experimentation.

The examiner further disagrees with the appellants statement that examiner has incorrectly asserted that appellants have claimed an apparatus and method for "program analysis" as a basis for independent claims instead of "software analysis" as recited in claims 1 and 11. Claim 1, for example, recites the following:

*"1. A software analysis apparatus comprising:
program analysis information generation means for **automatically generating program analysis information** required for **analyzing a computer program**;
program analysis information storage means for classifying the program analysis information generated by said program analysis information generation means in an arbitrary unit or at an arbitrary timing, and sequentially storing the program analysis information in a predetermined data recording medium; and
program analysis means for **executing program analysis** by reading out the program analysis information from said data recording medium."*

*While the preamble to the claim refers to a software analysis apparatus, the **limitations** of the claim are clearly drawn to "analyzing a computer program", "executing program analysis", and "automatically generating program analysis information" for a computer program (software). Further, the specification states that the claimed invention "has as its object to reliably **analyze a large scale program**" (page 4, line 28). The examiner has specifically applied 112(1) rejections against the limitations of the claims in light of the specification, and not that which is well known (i.e. symbol table, call graph, source code, etc.) and not specifically claimed.*

*By way of another example, claim 1 above includes the limitation of "**automatically generating program analysis information**". The specification on pages 23, line 1 through page 24, line 17, and Figure 4 attempt to define the overall operation of the software analysis apparatus. Page 24, line 9 references step 8, of Figure 4 (ANALYZE PROGRAM), and states that "the program analysis processing unit executes program analysis processes using corresponding ones of the program analysis units."*

Page 21, line 13 of the specification discloses that the program analysis units execute an **"analysis process"** that includes, for example, **"influence range analysis"** which "reads out" syntactic analysis tree, call graph, flow graph, program dependence graph, and module I/O information (i.e. well known processes) and further states that "the **range of influence** of a given line of source code of the program is **analyzed**".

Obviously, this implies that some form of **computational analysis** is performed on the syntactic analysis tree, call graph, flow graph, program dependence graph, and module I/O information (well known processes) in executing the **"analysis process"** by the program analysis units. The specification is again completely silent on the specifics of **how** this **"analysis process"** is performed. Accordingly, the examiner maintains that essential matter relating to the operation of the claimed invention has not been disclosed. Hence, the specification does not disclose specifically how the **automatic generation of program analysis information** is accomplished in such full, clear, concise, and exact terms as to enable any person skilled in the art to make and/or use the invention without undue experimentation. The examiner has further maintained the 112(1) rejection since the limitation of "generating program analysis information" is also included independent claims 11, 13, 22, 24, and 33. Dependent claims also inherit this defect.

Regarding appellants arguments relating to 35 U.S.C. 102(e) rejection: In the final office action (paper #10) the examiner made the following statement;

"As stated in the office action of November 11, 2001 the specification regarding the claimed invention is delinquent in the areas sited in previous paragraphs and the examiner has made prior art rejections based on the limited scope of the disclosure. Accordingly, since as sited above, no specific information regarding how of claimed

*inventions' "**analysis process**" operates, the examiner has been forced into taking a broad interpretation of exactly what the applicants invention is and what specifically has been claimed. Wygodny teaches a method and system used to "analyze" a computer program (CL3-L17, CL4-L54) and has accordingly been applied as prior art against the claimed invention."*

*The examiner disagrees with appellant's statement that the "trace" information of referenced prior art is technically different from the "analysis information" of the claimed invention. A "trace", as disclosed by Wygodny, and as known in the art, merely represents a sample of **analysis information** gathered from a program (software) that has been stored in computer memory. The examiner asserts that the claims do not recite limitations that distinguish the claimed inventions analysis information from the trace information of Wygodny. Appellants have argued that prior art does not teach program analysis information being obtained from a non-executing software program. The examiner asserts that there are no claimed limitations which would indicate that the obtained (analyzed) program information is gathered from a "non-executing software program". While independent claim 11 (only) does contain "means for" language, the limitations are directed toward hierarchically registering analysis information and not toward obtaining program analysis information. All other independent claims are method, apparatus, and program recording medium claims and, again, do not specifically claim limitations relating to program analysis information being obtained from a non-executing software program. Accordingly, the examiner asserts that appellants are arguing features that have not been specifically claimed.*

Appellants have also argued that the prior art does not teach the limitations as recited in independent claim 1.

Independent claim 1 merely includes the following limitations:

A software analysis apparatus comprising:

*Program **analysis information generation means** for automatically generating program analysis information.*

*Program **analysis information storage means** for **classifying information** in arbitrary unit, in **arbitrary time**, and storing in a **recording medium**.*

*Executing program analysis by **reading out data from recoding medium**.*

*The examiner asserts that Wygodny clearly discloses the **claimed limitations** of independent claim 1 as follows:*

*1.) Program **analysis information generation means** for automatically generating program analysis information.*

– Wygodny discloses program analysis and generation of program analysis information (Fig. 2, 3A-7, CL2-L53-67, CL3-L17).

*2.) Program **analysis information storage means** for **classifying information** in arbitrary unit, in **arbitrary time**, and storing in a **recording medium**.*

– Wygodny discloses analysis information storage and classifying information (Figs. 1A-3B, table 1), in arbitrary time/units in a recoding medium. (see table 1: start/stop, run, execute, save)

*3.) Executing program analysis by **reading out data from recoding medium**.*

– (See Wygodny table 1, Figs. 1A-3B)

*Appellants have further argued that prior art does not teach a software analysis method with features including classifying program analysis information in a predetermined data recording medium or executing by reading out program analysis information from a data recording medium. The examiner asserts that appellants have not disclosed specifically how the analysis data is classified. Wygodny discloses classifying data as a graphical representation of the collected (analyzed) data showing program flow, program calls, and I/O information. (Figs. 3A, 3B, 5-7, 13-14) Further, and as admitted by the appellants (page 23, line 11), Figure 7 of Wygodny discloses a class page window that provides a hierarchical tree of trace objects sorted by class. (i.e. **classification** of the analysis information)*

Appellants have also argued that prior art does not disclose a database or database structure. The examiner asserts that while this is obviously an inherent feature to any software program analysis system, it is also expressly disclosed by Wygodny in Fig. 1 (121).

Appellants have argued that prior art does not teach a software analysis method that includes hierarchically registering program analysis information in units of analysis objectives. The examiner asserts that, again as admitted by appellants (page 23, line 13), Figure 6 of Wygodny discloses a file page window that provides a hierarchical tree of trace objects (analysis information) listed according to hierarchical level. Neither the specification, nor the claims, specifically define the "units of analysis objectives".

*The examiner also disagrees with appellant's statement that there is no evidence to support that it would be obvious to include certain "well-known" features such as gathering, storing, and classifying data by type (i.e. syntactic, symbol, etc.) in the limitations of the claimed invention for the reasons cited above. (i.e. the features are **obviously inherent** in any system used for analyzing software programs.*

For the above reasons, it is believed that the rejections should be sustained.

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